Q U A N T A

T H E   N E W S L E T T E R   O F

T H E   I N D E P E N D E N T   Q L   U S E R S '   G R O U P

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INFORMATION ON THE GROUP

Membership of the Group is by subscription to the Newsletter, which is published monthly. Membership details are obtainable from the Group Secretary. Membership of the Group is open to anyone with an interest in the Sinclair QL microcomputer.

Members requiring assistance with problems related to the QL may call the Secretary. An attempt will be made to put them in touch with a member who can help with the problem.

Workshops will be arranged from time to time in various parts of the country.

A membership list is obtainable from the Secretary.

Please send all contributions for the Newsletter to the Editor.

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EDITORIAL

Lots of members now have their machines. On the whole, they agree with my comments in the last issue of Quanta. One member, having read my review, tried to cancel his order, but Sinclair had already dispatched it!

The latest version of QDOS, and the SuperBASIC interpreter, are, by all accounts, satisfactory, and all the (known) bugs have been eradicated. The bad news is that it will be about two months before it has been 'masked' and incorporated in production machines. Some machines have recently been shipped with additional code in a cartridge that has to be plugged into the cartridge slot at the back of the machine. Sinclair are now mounting the EPROM with the additional code inside the machine.

I recently wrote to Sinclair (on behalf of my company) asking how I could obtain a copy of the QDOS documentation, so that I could get some of the software I have developed working on the QL. The reply (by return of post!) stated that it was available at a cost of £10. I have ordered a copy, and hope to include details of how one uses QDOS functions in assembly language programs in the next issue of Quanta.

I organised the group stand at the Earls Court Computer Fair and found it an exhausting but enjoyable experience. There was a considerable amount of interest in the group (we got rid of all our application forms), and about 40 people joined during the Fair. My thanks to Jeremy San, Malcolm Newport, Rob Sherratt and Alan Cadell for helping to man the stand. Rob and Alan were good enough to bring their QLs along which proved to a lot of people that it actually existed and was being delivered. My thanks also to Mr. Les Payne of HI-VU Electronics, Wolverton, for loaning me a very nice Luxor TV/Monitor.

Leon Heller

MEMBERS LETTERS

Many thanks for the latest Quanta, it only takes six days to get here.

I was very surprised by the letter published on pages 3 and 4 of the newsletter. I personally did not agree with Mr. Hedges criticisms, his first suggestion was briefly answered in the Issue number 1 (Feb.) and his other suggestions would be nice, but I wonder if they could be carried out effectively. Also, his note on 'Sinclair bashing' I believe did not agree with the letter you sent to Mr. Hatty.

Anyway, I still have three months before I go on leave, so I'm hoping that my QL will arrive by then! I would be extremely interested in a software library (commercial or otherwise), program exchange, swap, etc.

Also, having used Hewlett-Packard HP85s and HP9845s, would find it useful to have a utility to 'SAVE', 'GET' programs as DATA files, so that programs can be manipulated (renumbered, strings searched, replaced, variable names replaced) etc. Most of this utility would be straightforward, but how would keywords be listed without a look-up table?

Also, could a facility for people with certain interests, mine is land survey, be set up so that they could exchange notes, subroutines or whole programs.

I am interested in setting a printer (preferably daisy wheel) and any information of which printer works and which don't would be helpful.

Once again I must saw how impressed I am with the newsletter (considering the QL doesn't exist).

Kevin Bear,
XTD/11,
P.D.O.,
P.O. Box 81,
Muscat,
Sultanate of Oman.

/* Thanks for the vote of confidence! The utility you mention in your fourth paragraph looks very like the 'toolkit' utilities that have become available for other machines. I daresay someone will produce one for the QL before long. Much of what you require can of course be performed by using Quill on the program. One of our members tells me he has tried this and it works.

Could any other members with special interests write in? I can allocate space in the newsletter for your use, and publish names and addresses so that you can keep in touch with one another. */

Needless to say, I have not received my QL yet, but my initial interest is in finding a good VDU and printer. Perhaps your newsletter may discuss compatible peripherals. At some state I hope CAD software suitable for architects will be available, when I shall be looking for a plotter.

Patrick Doorly,
158 Boundaries Road,
London SW12 8HG.

/* Most plotters have an RS-232 interface, so it should be easy to connect such a device to the QL. I would think it would be some time before suitable CAD software is available, however. */

I am about to abandon my ancient UK101 in favour of a new QL. Although my UK101 is of little value, it does have attached to it two nearly new 5 1/4' S.S, S.D. 40 track disk drives. Can these be attached to the QL without too much troubles and is this worth doing?

I think that there may be a number of QL owners faced with a similar problem. Can a solution be provided in the pages of your magazine?

J.R. Camp,
48 Eastdean Avenue,
Epsom,
Surrey KT18 7SN.

/* Looking at the expansion bus connections (summarised in this issue) this looks quite feasible from a hardware point of view. We will need a lot of detailed information on QDOS, and it is not certain when this will be available from Sinclair. */

Thanks for taking the trouble to organise an independent user group. Now that machines are becoming available you are going to be of enormous help in keeping the punters informed of Sinclair and Psion's activities, hopefully including some details which they may be reluctant to publicise, such as ROM changes and software revisions.

I have not been able to get the database to allow fields of greater than one line, although the manual says that each field may contain up to 255 characters. The only way round this that I have been able to think of is to name successive fields with slightly different words such s field1$,field2e etc, which means that the find command becomes less useful.

The basic is still like the curate's egg, for instance the fill command is extremely fast, whereas the point command, particularly if used within a for loop, is incredibly slow and only seems to plot alternate pixels. I hope these and other design flaws are put right in the final ROM, and I'm counting on the vigilance of the independent user group to ensure that those who received "early" machines also benefit from the debugging still going on.

Whilst familiarising myself with the use of SuperBASIC I wrote the 2 short routines enclosed, which should do the same thing, and indeed they do for a while, but after several minutes the the routine using DEF PROC stops with an out of memory report. Does this mean that procedures in SBASIC can only be called a finite number of times?

Finally I expect that a lot of new owners will be looking for a suitable printer. I recently bought a CP 80 and a miracle QL/Centronics interface, total cost £250. You can plug in and go and the Psion package will drive it as well. The quality of print is very good, at the exhibition where I bought it, it was next to an Epson and if anything I thought the print was rather better on the CP 80.

```
90 CLS
100 PAPER 1
105 BORDER 5,3
110 FILL 1
115 draw
120 DEFine PROCedure draw
150 SCROLL 3
220 INK RND(0 TO 255)
230 LINE RND(30 TO 70),RND(30 TO 70) TO RND(200),RND(200)
250 draw
260 END DEFine

100 CLS
110 PAPER 0
120 BORDER 2,4
130 FILL 1
140 REPeat draw
150 SCROLL 3
160 INK RND(1 TO 255)
170 LINE RND(30 TO 70),RND(30 TO 70)TO RND(200),RND(200)
180 END REPeat draw
```

G R Taylor.

/* The problem with your first program is that the draw procedure is defined recursively. That is, draw calls itself. Each time draw is executed, the stack is used, eventually causing you to run out of stack space, hence the out of memory error message. Recursion is fine provided you set a limit to the depth of recursion. Generally speaking, procedures may be called any number of times, since the stack is returned to its previous state when the procedure is exited. */

I should like first of all to commend both the quality of your magazine and your determination to maintain an independent user group for the QL. In view of the somewhat chequered career of the machine thus far, it can only be a good thing that there is an organisation in existence to represent to Sinclair the interests of their customers, as well as helping to disseminate information and thus to dispel rumours.

I have before me the current (June) issue of PCW which contains no less than two items of interest to would-be QL users: one is an item by Guy Kewney, a respectable industry pundit, expressing a strongly negative reaction to the machine; the other a Bench test by an equally respectable industry pundit, David Tebbutt, expressing a broadly positive reaction. In these circumstances, one may be forgiven for a certain degree of confusion. What does emerge quite clearly from both articles, however, is that at the time they were written (mid-late April) the QL was to all intents and purposes an unfinished product. The firmware was not finalised; QDOS was not fully implemented (specifically, concurrent processing was not supported); SuperBASIC was not fully implemented; the Microdrives were not yet performing as well as the might do.

This raises the following question: When (if ever) will Sinclair be in a position to sell us a finished product? Of course the QL is an advanced machine, and there are bound to be difficulties in development, but I would be less than happy to shell out £400 for a late prototype as opposed to a proper working model, and I suspect I an not alone in this. And what about those of us who have already parted with their money? Mr.Tebbutt speaks of a voucher system to enable upgrades to the final machine, but this appears to be little more than educated speculation. It seems to me that these are points which we might usefully put to Sinclair, and not to the PR department!

Another question which is of particular interest to myself, but which will doubtless be relevant to many others, concerns the "excellent" free software from Psion. My worry is not so much that the software in itself is of poor quality - Psion have earned themselves a very good reputation - but that it will not be possible to run more than one job under the allegedly concurrent QDOS. I intend to use my QL (should I live long enough to see one) to help me in a research degree in English; thus I shall be primarily reliant on Quill, but it would be extremely useful to be able to use Archive at the same time, to make my notes accessible to me as I am word-processing. I imagine many potential users will have similar requirements. According to Mr. Kewney, there are no plans to amend this situation, even though Psion are planning to release versions of the software for "true" concurrent machines. Is it true that there are no such plans, and if not, why not? Can we possibly persuade Psion (if not Sinclair) that there is going to be a worthwhile demand for real concurrent versions of these programs, even if we don't get then for nothing?

The real problem which underlies all these worries is Sinclair's decision to announce the QL well before it would be ready, as a matter of marketing policy. From the point of view of Sinclair this has been a great success, as it has enabled them to grab and keep the headlines, and thus obtain free advertising. From our point of view, however, as potential end users, it can only be described as shabby treatment. Many people have parted with their money (and even in these inflationary days it is a tidy sum) and in return they have had either nothing at all or else a QL box with a prototype machine inside it. When and if there are working QLs in existence which will actually do all the wonderful things which Sir Clive has promised, he will have done his customers a real service. It is not a question of quantity but of quality: I don't care if they can turn out ten thousand Ur-QLs a week, what I want is a grown-up one, and so do many other people. It's enough to make you buy a BBC!

Although this letter may seem to be one long diatribe against Sinclair, it is really motivated by admiration for the machine itself, or rather for what it will/might become. The QL should be easily the best buy on the market; on paper, indeed, it already is. I only wish Sinclair could actually see their way to manufacturing it!

T.M. Carman   Keep up the good work.
Lady Margaret Hall,
OXFORD 0X2 6QA

P.S. Perhaps Sir Clive's well-known promise of delivery within 28 days may be explained by the theory that he was mentally on the planet Pluto at the tine he made the announcement (a hypothesis which seems to be in full accordance with the facts); since 1 day on Pluto = 6.39 Terran days, the real delivery time promised by Sir Clive was actually 6.39 x 28　　 = 178.92 days - a such more realistic figure, as it turns out. A mistake anybody could have made....

It was with regret that I could not attend the workshop held at Cambridge on 28th April.

I would appreciate receiving any notes that were made available on that day together with the programs and you will find enclosed some help with the postage.

I received last week a card from Sinclair saying that my order for the QL was now being processed for despatch ! ! ! - oh what now only another month or so to wait.

Should it be of any interest these premises may be used for a workshop or similar meeting but it would be restricted to a Sunday or Monday evening when our restaurant is not open.

We have used for some time now a Commodore 8032/8050 set up which has been very reliable and I have written a great deal of software which will be transposed when the QL arrives. Some of the software may of course be of use to other members of QUANTA.

With regards to Monitors perhaps you could comment on the Commodore 1701 monitor which sells for around £195.00 will this be satisfactory for the QL?

I am also interested in purchasing a Juki daisywheel printer. Have you any knowledge of this printer or have any of the members or could you suggest a similar daisywheel that would be compatible with the QL?

Do you have any idea of the type of software that will be offered to QUANTA members from the library?

Carry on the good work with the group and I look forward to hearing from you.

Ralph Horton.
The Swan Inn,
Bradwell,
Nr. Braintree,
Essex.

I have digs in Luton, as I work here, and I would be interested in local meetings in the evenings during the week,if any took place.

I have an HX24 at the moment, and I am due to receive my QL 'by the end of July'. I did a microprocessor-biased HTC Electronics course at Reading College of Technology, and I am now Service Manager and programmer for Credshire, who are the Leaders in computerised crop storage environment monitoring and control. We use Pets and VIC 20s at work.

I have vague plans for writing an assembly language chess programme for the QL, and increasing it's speed of operation by hanging a few 68000s off the back of the QL, as I mentioned to you on the 'phone this evening.

I would appreciate some advice on this project, but I hope that I will be able to contribute to the group as well as benefit from it.

R.T.Roadnight,
'Cloudshill',
34, Bretforton Rd.,
Badsey,
Nr. Evesham,
Worcestershire,
WR11 5UG

I received the first two editions of Quanta at the end of last week, and read them with interest but some difficulty.

Myy own opinion is that the typical QL user may be quite different from that to whom your publication is currently angled - the computer enthusiast. It is of course almost always fallacious to think of oneself as being typical but there must surely be others in a similar situation to myself.

I am in a small business with a large overdraft, and in consequence do my own book-keeping. A spreadsheet will enable me to avoid going endlessly over pages and pages of figures, checking that the rows balance the columns and rechecking each time they do not add up to the same total. Once set up properly I should only have to enter the information and the figures should balance without further ado.

There are a number of letters which I now have to type from scratch which contain many of the same paragraphs. A word processor would enable me to store them and produce a clean copy each tine without retyping the bulk of the contents.

An Apple would cost over £2,000 including all the necessary peripherals and programs, and the memory of the spreadsheet may be tight. An IBM PC is quite out of the question as far as cost is concerned. So the QL offers the prospect of fulfilling my requirements for less than £1,000 including an Epson RX80 F/T, and who knows, I may be able to get some benefit from the database and graphics packages. I do not want to know how to program, merely how to use the machine to get some essential work done more easily.

How about - A register of order dates, delivery promises, actual delivery dates, and problems found, and asking each member to contribute his/her own input e.g. I ordered on 31 Jan and have been promised End May.

Advice on how to convert a colour T.V. to a Monitor and a black and white to a monochrome monitor, as these televisions are so comparatively cheap. Incidentally is the rumour true that a monochrome monitor will not show bold text on the screen as the use of green script is necessary to display it?

Anon.

The enclosed letter is for publication if you want it. The following is less likely to be of general interest, but you did ask for information about the sort of thing I'd like to see in Quanta. You can print it too if you like.

I'm entirely a business user. No interest in games, no interest in delving into the innards of the machine, no interest in assembly language programming: though I reckon I'm a pretty good BASIC programmer (I have a NewBrain which I shan't be getting rid of) and I might be persuaded to learn "C" if I was convinced I had a use for i t .

What I would like from Quanta is solid, non-technical reviews of software and hardware, focussing on what it can rather than on how it does it, if possible making detailed comparisons of similar items from different manufacturers. Also listings in SuperBASIC (and possibly "C") of programs and routines useful in a business or administrative context. Also different ideas for using the Psion software, especially the spreadsheet and database, (could Archive be used as an expert system database?), and any other software or hardware that's available. Unfortunately my preferred approach will probably conflict with that of the majority of IQLUG members, who I imagine will want more technical articles.

Ways of using the NewBrain with the QL may seem more of a matter for the NewBrain user group than for IQLUG, but I'd be interested in any ideas. What I'd like to do is use the NewBrain as a terminal, connected via the RS232 port, so that the NewBrain has read-only access to the QL files and the QL can use the NewBrain as a 30k printer buffer and perhaps as a cassette interface. (The NewBrain can control two cassette recorders simultaneously, like L.C.H.'s "ancient 6800 computer" in issue 3.) Actually the NewBrain's a very nice little computer, with a more attractive character set than the QL, and it's ideally suited as a terminal. There must be quite a number going cheaply at the moment. Like the QL, the NewBrain has a serial printer port, but I already have a serial interface on my FX-80, so it's not a problem.

To take the point further, it seems likely that a lot of people will be upgrading to the QL from other computers which they don't want to abandon. Articles on ways of using the QL with other computers would probably be welcomed by many IQLUG members.

A final thought. In the enclosed letter I said that I assumed that peripheral manufacturers would join IQLUG. If they don't, maybe you could prod them a little by sending them each a free copy of Quanta and inviting them to join.

It's about time I got my desk in order. The neatest arrangement is the conventional business micro layout, with the keyboard at the front of the desk, connected by a single lead to the disk drives and screen at the back, with all the other leads out of sight behind them. It would be convenient if the QL could get close to this arrangement.

Unfortunately Uncle Clive hasn't helped us at all. He's given us an octopus in the middle of the desk. You have to stick the microdrive cartridges in the front, anything added to the expansion slot sticks out on the left, anything added to the microdrive extension sticks out on the right, and the remaining cables stick out all along the back. Just imagine your QL with a couple of disk drives or microdrives plugged in where the brochure pictures them. You'll have equipment strung out all along the front of your desk, and the area behind that will be a mass of cables. You won't have room for anything else on the desk, no notepad, no books, not even (let alone) a mouse.

The point of this letter is to suggest to peripherals manufacturers, including Sinclair Research, that they should do all they can to reduce the footprint of the equipment. For instance, microdrives and disk drives should be designed so that they can sit under the monitor instead of where Sinclair imagines them. This means that the ribbon cable must be long enough to turn a right-angle when it comes out of the microdrive extension socket and still reach the back of the desk. Since the cables coming out of the back of the QL are unlikely to be ribbon cables they should be connected to right-angled plugs so that instead of sticking straight out they all turn sharp right and slightly upwards (to avoid interfering with each other). Then they can all be tied together and will be hardly more awkward than a single cable.

Peripherals using the expansion slot should if possible fit exactly under the QL; that should give enough room for several add-on cards. A Joystick or trackball (better than a mouse) would fit neatly in the otherwise wasted space over the internal microdrives, though an add-on numeric keypad is a rival candidate for that position. Perhaps the best solution would be to provide separate clips so that such peripherals could either be clipped on or remain free standing.

I'm sure that Quanta readers will have many more ideas, not only about what peripherals they want but also about where they should be positioned. If we state our ideas now instead of waiting till the manufacturers have started manufacturing we'll be more likely to get what we want. A good example of this is the way in which Malcolm Newport persuaded Microvitec to make a version of their QL monitor with a composite video option, as reported in issue 3. That's the version I expect to get. I assume that the peripheral manufacturers will have enough intelligence to join IQLUG and find out our views.

Regarding the Great Microdrive Controversy, I am sure that ultimately we shall all be very grateful for our microdrives, since they will provide a complete back-up system for when our floppy disk drives go wrong. (Evidently the independent manufacturers see no difficulty in providing floppy disk drives, so Uncle Clive's intention not to give us any hardly matters.) And if we can't afford floppy disk drives yet, the microdrives will make a good substitute until we can. The floppies in turn will provide a complete back-up system for the hard disk when we can afford that. But as for the idea that we might want to stick half -a-dozen 100k external microdrives onto the QL when an unformatted 1 Mbyte disk drive is actually cheaper, I just can't believe that the chairman of Mensa ever took it seriously.

(Most business users will eventually want both hard and floppy disks, particularly if they use several micros tied together by the LAN or via a modem. The hard disk will be used for files and programs which must be permanently available to the system, while the floppies will be needed for files and programs which must be secured from prying eyes, which have to be physically transportable, or which are used only occasionally and so do not justify the use of expensive hard-disk space, e.g. old records.)

It is important to realize that software will be sold on microdrive cartridges. This means that all QL software must, be copyable. Nobody outside Sinclair Research knows what the normal lifespan of a microdrive cartridge is, but it is bound to be a lot shorter than that of a disk, or even of a cassette, because of the way in which the tape is twisted. Back-up copying is always essential in a business environment; and when the programs are on microdrive cartridges, not having back-up copies will be suicidal. Consequently, anybody who buys copy-protected software can only be insane. Moreover, users who have disk drives will want to transfer their programs to disk for faster and more reliable loading, leaving the original cartridge as back-up. One useful function of IQLUG will be to let us know which commercial programs are copy-protected. and which aren't. The advertisements won't tell us. One of the worst aspects of software piracy is that it forces manufacturers to make life difficult for the rest of us, who need to make copies for legitimate purposes. (Having written all that, I'll probably find that the Psion packaged software is copy-protected, though since every QL owner will have a copy anyway there's no reason why it should be.)

What is the position about disk formats? As I understand it , any IBM PC or PC compatible computer can read disks produced for the PC because the disks adhere to a common format, laid down by IBM. What will be the situation about QL disks? With various different makes of disk drive on the market, will one make of disk drive be able to read disks produced on the drive of a rival manufacturer? I f not, do we have to put up with this situation? Could IQLUG declare that it adopts a particular format or set of formats as standard, e.g. for exchange of programs and files between members? If it did so, wouldn't this put pressure on manufacturers to conform? If a particular standard were generally adopted, might the software houses be willing to produce programs on disk? Evidently, Sinclair Research has no interest in the question; if there is anything to be done, we will have to do it ourselves.

J.B. Downie

At the moment I use a 6502-KIM computer, extended with a serial terminal, 48 kbytes of RAM, a printer and the languages Basic, Assembler, tiny-Pascal, and Forth. I have written my own operating system and still use a cassette interface. There is unfortunately almost no support for the KIM like word processors, full implementations of Pascal or C, spreadsheets, or one of the exiting games like Adventure, PacMan etc. Looking at the support given to the ZX 81 and Spectrum and considering the relatively low price for the valuable QL I expect there will be much hard- and software available for the QL in the near future. As I am looking for a more up-to-date computer at a reasonable price and with preferably a 68000 processor I am very interested in the QL and will probably buy one when it is available in Holland.

For my profession, electronic engineer, I have read much about the new 16 bit microprocessors and I regret to see the 8086 getting so much support. On the other hand I really love the 68000, but until now only the Sage, Lisa, and Macintosh, costing more then 10.000 Dutch guilders or 2.500 pound, were available. Now that the cheap QL is available I hope it will push the 68000 in being accepted as a standard at least as much as the 8086.

Secondly, as I suppose that you are well informed about the QL, I would like to ask a few things I would like to know before I decide to buy the QL. I would be very grateful if you would answer them, I added an addressed envelope for your answers. These are my questions:

-What sort of software and hardware are Sinclair and third party manufacturers planning to develop for the QL.
-Will the source-code of QDOS, the 8049-control program and the hardware scheme of the QL be published.
-Is the keyboard of (common-)good quality.
-The 68000 has a supervisor- and a user mode. When I run a self-written assembly-program, will it be restricted to the user mode or can I run it in supervisor-mode so that nothing in the computer can be made inaccessible. If not, are parts of the QL made inaccessible in user-mode.
-The QL has its expansion-connector on the left hand of the keyboard. When I have put some expansions in this connector will it not be difficult to use the keyboard with my left hand.
-Is it possible to reprogram some chips (by software !!) to get a 512 by 512 (or 256 by 1024) picture with only two colours (B&W). Of course QDOS will not support this resolution.

- ill the information be available to hook any (other than the QL and Spectrum) computer, such as my KIM, to the LAN. I am capable of developing the hard- and software for the KIM myself when I know the protocols used.

Does SuperBASIC have the following possibilities:

-Save data (reals, integers, strings) on microcassette,

-Procedures and functions with local variables.

-Possibilities to merge and chain programs.

-Commands to draw, plot, paint etc. to use the graphics-screen.

-PEEK and POKE to access the memory and something like USR to run machine language programs from within Basic.

-Does "device independent I/O" mean I can use a terminal connected to a RS 232-port to replace the QL keyboard and display, as long as no graphics are used.

-Does the Psion-word processor have a command to align the right side of a paragraph of text (like Wordstars ^B).

-How much will the Sinclair Assembler, Pascal and C compiler and the 512 kbyte RAM expansion cost approximately.

-Will it be possible to have operating systems like CP/M 68K running on the QL hardware, provided one can get the software on a microcassette.

I am looking forward to the issue of Quanta and your answers. If you would like to publish this letter in your newsletter this is alright with me provided you send me a copy of the newsletter it is published in.

A.W. den Hartog
Tienvoet 2
3261 TP Oud Beyerland
The Netherlands

As a recent recipient of a Sinclair QL I was very interested to see the existence of your club. I am using my QL to familiarise other members of my company into using these small personal computers rather than the large installations that they have up to now been used to. They have had no real contact with computers other than reading reports which have been compiled from their output.

I was quite pleased with the four standard packages but was disappointed to realise that none of the packages or games on the computer shop shelves as yet operate on the QL. However, by joining your club and having contact with other QL users I hope to help this problem.

A.G. Franklin

68008 Grundprogramm	12,-- DM
Über 170 Seiten mit dem Assembler, Editor, dem Bibliotheksmodul und den anderen Routinen des Grundprogramms.	
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kurze Einführung in Pascal, die Beschreibung von	Lothar Wolfel,
Pascal-S, das Originallisting von Pascal-S und	Frankfurter Strasse, 86,
den gesamten Pascal-S-Interpreter sowie etliche	6350 Bad Nauheim,
Pascal-Programme.	F. D. R.

Early publications, advertisements and supplements regarding the QL make reference to a C compiler. As the publications were commissioned by Sinclair I assume that the compiler will be developed by Sinclair Research or by some company having been awarded a contract. Is it possible to estimate a cost for this software, and will other software houses be in a position to develop. compilers?

Although a great fan of C, most of my programming tends to be in COBOL. A lot of program development takes place at home. This is not a whim, I program in COBOL in an academic background and, on completing my studies, hope to obtain employment in industry. I wish to develop programs in my own home, so what are the chances of a COBOL compiler?

Andy Powell,
62 High Street,
Dereham,
Norfolk.

/* An Oxford software house is developing a C compiler for Sinclair for the QL, I am told. I doubt if will be available for a few months. I would think that the cost would be somewhere between £30 and £50. As to COBOL, I am afraid I cannot see anyone producing a compiler specifically for the QL as it would not be very popular. I doubt if it would be workable with Microdrives, anyway. With the hard disk, and Unix, however, COBOL could be used, but the cost is likely to be prohibitive. Why anyone would want to program in COBOL is beyond me, but since most commercial DP departments use it, if you wish to do commercial programming I suppose you have to use it! Of course, there is nothing to stop you writing your COBOL programs on the QL using Quill, and then taking the QL into work to transfer the program to the mainframe for compilation and debugging . */

I am joining your QL users' group in order to obtain information useful to a machine code programmer of the QL.

Information I would be immediately interested in is:-

    How the group functions and distributes data

    Details of the memory map

    Entry points to, and description of, ROM routines
    Possibly hardware info. such as external ROM pin signals

D. Heckingbottom,
20 Birkbeck Road,
Acton,
London W3.

/* Data is distributed via this publication. With the exception of the ROM routines, your other requests are answered in this issue. */

Can you or any other reader tell me if the Prism modem is suitable for use with the QL (realising that the interface cable is different). Are any of your members currently

subscribing to Micronet? Has anyone in the group got the expert knowledge required to write the software necessary to use the QL on Prestel?

Are any of your members interested in communicating information, news or views on Micronet's Mailbox facility?

Wiliam Carcary,
Mooseglen,
12 Durley Dene Crescent,
Kintillo, Brides of Earn,
Perthshire PH2 9RD.

/* As I believe I have said before, the big problem with the QL is the fact that Prestel requires different baud rates for transmitting and receiving. Sinclair, in their wisdom (?) decided to have the same rates. This might be possible to get round with the software, which otherwise does not present any problems. If someone will tell me the address of the serial ports, and how to change the baud rate in assembler, and the QDOS traps for keyboard input and screen display, I'll write the software! */

After reading the reviews of the QL in the monthly and weekly magazines and your own brief review in Issue 4, I have decided to cancel my orders and wait until the QL reaches the shops. Hopefully by then the performance of the machine will bear some resemblance to the one described in the Sinclair advertising brochure. I hope, however, to keep in touch with developments via your newsletters, which have been very interesting up to now, despite the non-availability of the machine.

I am working through Leventhal's book of MC68000 assemblers and find it an excellent introduction to the subject. Having used only high-level languages on IBM mainframes, some aspects of machine code/assembler are not clear to me. For instance, I notice that there are no maths functions like SQRT, LOG, COS etc. Does this mean that I shall have to write my own algorithms in assembler, or can I tap into the ones used by SuperBASIC? Would it be possible to run an article in Quanta sometime, explaining the way MC68000 assembler/machine code can access the maths/Graphics/sound facilities - in principle, at least.

In the first issue of Quanta, there was a small article deriding Sinclair's claims that the MC68008 is a 32-bit processor. I recently received a QL challenge sheet (from Sinclair Research) comparing the QL and a Sage II item by item. The MC68008 processor in the QL is described as a '7.5 MHz 32-bit' CPU, while the MC68000 in the Sage is a mere '8 MHz 16-bit' CPU. This seems actually fraudulent, and carrying their own 'hype' a bit (or rather 16 bits!) too far.

Nicholas Coombs,
12 Westfield Close,
Keynsham,
Bristol BS18 2HQ.

P.S. Why, with a 32/8-bit processor at 7.5 MHz, is SuperBASIC so slow?

/* Of course, even IBM mainframes do not have maths functions directly available when using assembler. Like the QL, these are achieved by the use of subroutines, although most mainframes can Perform floating point arithmetic using special hardware, which eases the problem considerably.

We hope to have articles on accessing ROM routines from assembler, although we might first have to disassemble the ROMS.

The main reason for the slowness of the BASIC seems to be the fact that all arithmetic is carried out to a very high degree of precision, compared to other BASICs, which greatly increases the execution time of loops, for instance. I suspect that a large program on the QL will probably run faster than an equivalent program on, say, the Beeb, since Sinclair claim that large programs run just as fast as small programs on the QL, which is not the case with most other BASIC interpreters. Perhaps someone would like to test this hypothesis? */

EXPANSION BUS AND ROM CARTRIDGE DETAILS

My thanks to Malcolm Newport who provided me with the information on which this article was based.

EXPANSION BUS DETAILS

Here are the pin connections of the expansion bus. This information was taken from the latest issue of the QL documentation. Most of the signals are the standard MC68008 bus signals, but there are some other signals that seem to be related to the hard disk. Sinclair use a rather non-standard way of indicating signals that are active low (they place 'L' after them). I have used the standard technique of placing a bar over such signals. Sinclair have also used some non-standard names for the signals. I have given them the official Motorola names.

The connector is a male 64-way DIN 41612, the mating female connector should be readily available.

Pin	Signal	Pin	Signal
1a	GND	1b	GND
2a	D3	2b	D2
3a	D4	3b	D1
4a	D5	4b	D0
5a	D6	5b	$\overline{AS}$
6a	D7	6b	$\overline{DS}$
7a	A19	7b	R/$\overline{W}$
8a	A18	8b	$\overline{DTACK}$
9a	A17	9b	$\overline{BG}$
10a	A16	10b	$\overline{BR}$
11a	CLK	11b	A15
12a	RED	12b	$\overline{RESET}$
13a	A14	13b	VSYNC
14a	A13	14b	E
15a	A12	15b	VSYNC
16a	A11	16b	$\overline{VPA}$
17a	A10	17b	GREEN
18a	A9	18b	BLUE
19a	A8	19b	FC2
20a	A7	20b	FC1
21a	A6	21b	FC0
22a	A5	22b	ROMOE
23a	A4	23b	A1
24a	A3	24b	A2
25a	DBG	25b	SP3
26a	SP2	26b	$\overline{IPL0}$
27a	DSMC	27b	$\overline{BERR}$

28a	SF1	28b	$\overline{\text{IPL1}}$
29a	SF0	29b	EXTINT
30a	VP12	30b	VIN
31a	VM12	31b	VIN
32a	VIN	32b	?

The functions of the signals are as follows:-

Signal	Function
A0 - A19	Address bus
D0 - D7	Data bus
R/$\overline{\text{W}}$	Read/Write
$\overline{\text{AS}}$	Address Strobe
$\overline{\text{DS}}$	Data Strobe
$\overline{\text{BG}}$	Bus Grant
DMSC	Data Strobe - Master Chip (?)
CLK	CPU clock
E	MC6800 peripheral clock
RED	Video RGB signal (?)
BLUE	Video RGB signal (?)
GREEN	Video RGB signal (?)
CSYNC	Composite sync (?)
VSYNC	Vertical sync (?)
ROMOE	ROM output enable (?)
FC0 - FC2	Processor Status
$\overline{\text{RESET}}$	Processor Reset
$\overline{\text{DTACK}}$	Data Acknowledge
$\overline{\text{BR}}$	Bus Request
$\overline{\text{VPA}}$	Valid Peripheral Address
$\overline{\text{IPL0}}$ - $\overline{\text{IPL1}}$	Interrupts
EXTINT	External Interrupt (?)
DBG	Data Bus Grab (?)
SP0 - SP3	Select peripheral 0 - 3 (?)
VIN	9V DC (500 mA max.)
VM12	-12V
VP12	+12V

The signals with a question mark against them are the ones that are not standard MC68008 signals, and I am not quite sure what they do. Their functions will be described in a subsequent issue.

ROM CARTRIDGE SLOT

ROM CARTRIDGE PORT DETAILS

Pin	Signal	Pin	Signal
1a	N.C.	1b	Vdd (+5V)
2a	A12	2b	A14
3a	A7	3b	A13
4a	A6	4b	A8
5a	A5	5b	A9
6a	SLOT	6b	SLOT
7a	A4	7b	A11
8a	A3	8b	ROMOE
9a	A2	9b	A10
10a	A1	10b	A15

11a	A0	11b	D7
12a	D0	12b	D6
13a	D1	13b	D5
14a	D2	14b	D4
15a	GND	15b	D3

ROMOE is listed in the documentation as active high. This is probably the reason for the TTL chip on the external EPROM cartridge that is needed at present to get over Sinclair's design cock-up, in order to provide an active low signal for the EPROM. Masked ROMs use an active high enable, according to a friend of mine who works for a semiconductor manufacturer.

MEMORY MAP

```
FFFFF
          RESERVED          expansion I/O
C0000
          RESERVED          RAM expansion
40000
          RAM   96K         main RAM
28000
          RAM   32K         screen RAM
20000
          I/O
10000
          ROM 16K      ROM cartridge
0C000
          ROM 48K      system ROM (QDOS and SuperBASIC)
00000
```

The published memory map has a few mistakes, which I have tried to correct by lumping all the I/O from $10000 to $20000 together.

Leon Heller

MONITOR PROGRESS

My MC68000 machine language monitor/debugger keeps getting bigger. It now has the following functions:-

Examine/Modify memory

Dump memory in hexadecimal and ASCII

Fill memory with any value

Trace/Single-step by instructions with the contents of all registers (D0 - D7, A0 - A7/SP, SR, PC) displayed after each instruction has executed.

The trace function produces the following information:-

```
D0       D1       D2       D3       D4       D5       D6       D7
00001000 0000FFFF 00000000 FFFFFFFF 0000FFFF FFFFFFFF FFFFFFFF FFFFFFFF
A0       A1       A2       A3       A4       A5       A6       A7/SP
00001000 000005C0 FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFF FFFFFFFD 00001FE4
SR   PC
A700 00000584
```

The register dump above was produced by the monitor tracing its own operation.

Here is the register display subroutine I used, which illustrates some interesting MC68000 assembly language features:-

* * * REGDUMP * * *

*DUMP REGISTERS TO RAM, AND DISPLAY THEM
*USED IN TRACE FUNCTION

```
REGDUMP    MOVEM.L    D0-D7/A0-A7,-(SP)    SAVE REGISTERS ON STACK

           JSR        CRLF                 NEW LINE TO SEPARATE FROM PROG

           MOVEA.L    SP,A0                A0 LOCAL STACK POINTER
           MOVEQ      £15-1,D4             15 REGISTERS TO DUMP
           BSR        DHEAD                PRINT HEADING FOR DATA REGISTERS

REGDMP1    MOVE.L     (A0)+,D0             GET PUSHED REGISTER
           JSR        TXL                  PRINT IT
           CMP.W      £7,D4                NEW LINE AFTER D7 HAS BEEN PRINTED

           BNE        REGDMP2
           JSR        CRLF
           BSR        AHEAD                AND ADDRESS REGISTER HEADING
           BRA        REGDMP3              SKIP SPACE
REGDMP2    JSR        BLANK                SPACE
REGDMP3    DBRA       D4,REGDMP1           NEXT REGISTER

           MOVE.L     (A0)+,D0             GET STACK POINTER
           ADDI.L     £6,D0                ADJUST TO VALUE BEFORE CALL
           JSR        TXL                  PRINT IT

           JSR        CRLF                 NEW LINE AFTER ADDRESS REGISTERS
           BSR        RESTD                HEADING FOR SR AND PC

           MOVE. W    (A0) +, D0           GET STATUS WORD
           JSR        TXW                  PRINT IT

           JSR        BLANK                SPACE
           MOVE.L     (A0)+,D0             GET PC
           JSR        TXL                  PRINT IT

           JSR        CRLF                 NEW LINE READY FOR RETURN TO PROG

           JSR        CHRIN                WAIT FOR KEY PRESS
           MOVEM.L    (SP)+,D0-D7/A0-A7    RESTORE REGISTERS
           RTE                             AND RESTORE CONDITION CODES
```

I think this routine is re-entrant, so it should work in a multitasking environment.

Leon Heller

ARCHIVE FIND-SEARCH-SELECT

FIND will find any combination you type in, irrespective of case, but you must remember to DISPLAY it (looking for an occurrence of MARK I found Denmark). But it has then only found one file. There may be more, so invite it to CONTINUE.

SEARCH requires the entry to he in exactly the ,same form as it is in the file, and again only finds one record, so CONTINUE to see if there are any more.

SELECT also requires the exact, correct, entry, but its action is totally different. Effectively it culls the file so that after your SEARCH the file only contains those records which satisfied your requirement. If you make a mistake in your entry Archive will find no card in wyur filing cabinet that you want and will throw every card out of the windows so that you are left with nothing. Further FIND, SEARCH or SELECT can find nothing. If you become as confused as I did, use PRINT COUNT() which tells you the number of records still available to you. If the answer is 0, then you are looking at nothing; RESET is your saviour.

CONTINUE is not applicable after SELECT. Your refined file contains all the records you require, so go through them in turn using NEXT-BACK or LAST.

But I am probably teaching grandmothers about eggs.

Anon.

/* The writer of this excellent article did not want his name published, as he is a newcomer to computers and thought the article would 'advertise his foolishness', to quote from his letter. I wish more members would 'advertise their foolishness' in this way, as articles like this are what newsletters such as Quanta are all about, and are probably of more interest and assistance to the majority of members than the esoteric stuff that I and some of the more experienced members tend to write.*/

MULTI-TASKING

A couple of members have asked for an article on multi-tasking, which is one of the features of QDOS. I shall shortly be developing a simple multi-tasking executive for my MC68000 systems and since explaining something to someone else is the best way of learning about it...

Multi-tasking is quite new to personal computers, although it has been in existence on mainframes and minis for several years. Multi-tasking is an important concept used in connection with real-time systems. Real-time systems are controlled by software that mainly monitors and controls devices other than standard Peripherals. This software is usually interrupt-driven, and the appropriate functions must be performed at the correct time, even when the system is heavily loaded.

The main problem in developing real-time systems is looking after what is termed concurrency, that is, properly managing several parallel activities or tasks. This is done by a piece of software called a real-time executive. Tasks in a real-time environment may be thought of as analogous to sub-programs (subroutines, procedures and functions) when writing a program. A task is a system activity that proceeds logically in parallel with other activities. Of course, with only a single processor, only one activity may be performed at a given time, but it is possible to switch between activities or tasks at such a rate that, to a user, for instance, the tasks appear to be performed in parallel. This may be done in two ways. Firstly, by performing each task in a 'round-robin' fashion, with each task being allotted a, certain amount of time, which is the same for all tasks.

This so-called 'time-slicing' technique is that adopted by Sinclair for their QDOS operating system. Secondly, tasks may be prioritised, with a task having the highest priority being run in preference to a task with a lower priority, when more than one task is ready to be run. Some systems allow both types of operation, with tasks having the same priority running concurrently in time-sliced mode.

Typical functions performed by a multi-tasking executive include:-

create a task
delete a task
suspend a task
change the priority of a task
etc.

Just having several tasks running in parallel is not a lot of use, unless tasks can communicate with each other. Inter-task communications are handled by functions such as:-

post message in a mailbox
obtain a message from a mailbox
create a message queue
post a message to a queue
obtain the message at the front of the queue
etc.

Other functions often performed by a real-time executive include a real-time clock and character I/O. User-written interrupt handlers may be developed to interface between tasks and I/O devices.

The real-time executive I shall be developing for my MC68000 system will be based upon one published recently in Doctor Dobb's Journal.

Most of the above information has been taken from the VRTX Product Brief, published by Hunter and Ready, Inc. VRTX, standing for Versatile Real-Time Executive, is a real-time, multi-tasking executive available in ROM for most of the popular microprocessors, including the MC68000. The VRTX software is hardware independent and can be treated just like any hardware component. It has been used in a very wide range of applications, such as video games, intelligent terminals and automatic test equipment.

It will be interesting to see how QDOS compares with VRTX when information on the former becomes available.

VRTX is a registered trade mark of Hunter and Ready, Inc.

Leon Heller

SOFTWARE LIBRARY

Rob Sherratt has volunteered his services as software librarian. To get the library going. Rob has placed some of his own programs in the library. These are:-

Spirograrph   draws pretty pictures

File copy   copies all files from one drive to another

List   lists a Microdrive file to the printer

Boot   sample program which shows how to get a program to
                  load and run by itself (like the Psion programs)

If you wish to submit a program to the library, send it to Rob on a Microdrive cartridge, with an S.A.E. for its return, or a label with your name and address, and return postage. Rob will return your cartridge within a week, with the latest library programs on it. You may still use the library if you haven't got anything to contributes of course. Just send a cartridge with a list of the programs you require, and an S.A.E. or label with return postage. Small Jiffy bags might be the best way to send in cartridges, as they may readily be re-used.

Library lists will be published regularly in Quanta.

Rob's address is:-

Rob Sherratt,
“Betheden”,
129 Melford Way,
Cavendish Park,
Felixstowe,
Suffolk IP11 8UH.
Tel: (0394) 272782

Leon Heller

SOFTWARE VERSIONS

Members might like to check to see if their machines have the latest versions of QDOS/SuperBASIC. If you type PRINT VER$, the version will be displayed. The different version codes are as follows:-

        AH   current version
        PM   some bugs
        FB   unusable (in my opinion)

All machines will be upgraded when you return your system for the new ROMs.

Leon Heller

RGB CONNECTOR

8 pin DIN plugs are obtainable from:-

Maplin Electronic Supplies Ltd.,
P.O Box 3,
Rayleigh,
Essex SS6 8LR.

Order as:-

       FG40T (DIN Plug 8-Pin) TQ 100

The price is 62p.

Malcolm Newport

'MIRACLE' CENTRONICS INTERFACE FOR SINCLAIR QL

At the Computer Fair you asked for a review of the above. The answer is   "1" in Binary terms - i.e., I couldn't understand the brief instructions (11   words   only)   so   I plugged it in and we were in business as you see!

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CRAWLING VIDEO

One member rang me to ask if I knew of a solution to a "crawling" effect he was experiencing when using his QL with a monochrome monitor. He had tried three different makes of monitor, and they all exhibited the effect. I seem to remember something similar happening with the early Spectrums, but with colour output.

Has anyone else experienced this effect?

Leon Heller

QL CASSETTE INTERFACE - PROPOSED FORMAT

I have heard that one or two companies are going to produce a cassette interface for the QL. It would be sensible if a standard cassette format could be decided upon.

Let us first look at the requirements. The interface should be inexpensive, implying that as little hardware as possible be employed, reliable, and be suitable for a wide variety of recorders.

All these requirements can be met by simply storing each byte of data as a sequence of eight bits, with a logic 1 represented as a single cycle of, say, 1000 Hz, and a logic 0 represented as a single cycle of, say, 2000 Hz. Each byte will be preceded by a start bit and followed by a stop bit. This will give us an effective transmission rate of around 1200 bits/sec.

A couple of years ago I used this technique on a small 8088-based system I developed, and found it to be extremely reliable, fast, and inexpensive.

The General idea is that you use a single bit of an output port with some simple software to generate the 1000 Hz and 2000 Hz cycles, and feed the output straight into the input of an ordinary recorder, with automatic level control. To recover the data, you feed the output of the recorder, via a simple conditioning circuit , straight into a

single bit of an input port. It is quite easy to recover the data with some simple software. Provided that the output level of the recorder is quite high, this technique works very well, over a wide range of output levels, and requires virtually no hardware, apart from the I/O ports and the input conditioning. It is even possible to dispense with the input conditioning, but it makes the output level of the recorder a bit more critical.

Now that we have a suitable low-level protocol, we will have to develop some high-level protocols, and make some decisions about things like error-checking, leader format (a second or so of logic 0s or 1s is needed before the data, to allow the ALC circuitry in the recorder to stabilise).

In fact, this proposed format is quite similar to the one that Sinclair use on the ZX81 and Spectrum.

I would like some feedback on these proposals from members. If those of you who are into hardware and software development agree with them in principle, I'll try to produce a discussion document firming them up, so that we can get the hardware and software development started.

One important point to decide is whether we use one of the RS-232 ports of the QL for cassette I/O, with an external single-chip processor interfacing the RS-232 port to the recorder, or use an I/O device, such as a 6522 VIA, direct on the QL expansion bus. The cost will be about the same either way.

This type of interface, with appropriate software, could be used to decode BASICODE, as transmitted by the BBC in their Chip Shop programmes.

Leon Heller

68000 SUBROUTINES

For those members interested in assembly language programming, I shall be including a section on useful 68000/68008 subroutines. To set the ball rolling, here is a little byte search routine with a test program that uses it for the input validation of single key entries (valid hex characters, in this case). I might use it in the latest version of mw 68000 monitor/debugger.

I would like this section to have something of the flavour of the PCW Subset pages, with each routine generating some feedback from members regarding other applications and possible improvements, either in terms of speed or memory usage, although the latter is not now as important as it used to be.

Ideally, you should describe the routine, and illustrate its use with a simple test program. If anyone would like to participate, but has no 68000 assembler, send the program to me and I will assemble and test it for you, providing it is not too long, and I do not have to do too much debugging. Please use plenty of comments in your programs.

```
*TEST PROGRAM FOR BYTE SEARCH ROUTINE

            OPT     OBJ-H           INTEL HEX FORMAT FOR OBJECT FILE

*MONITOR ROUTINES

CHRIN     EQU     $404
CHROUT    EQU     $408
CRLF      EQU     $40C

          ORG     $1000

                   * * * MAIN PROGRAM LOOP * * *

START     JSR     CRLF            NEW LINE
          MOVE.B  £'*',D0         PRINT PROMPT
          JSR     CHROUT
          BSR     GETHEX          GET HEX CHARACTER IN D0
          BRA     START           GO ROUND AGAIN

                   * * * GETHEX * * *

*RETURNS A VALID HEX CHARACTER IN LOW BYTE OF D0.
*CHARACTER ECHOED TO TERMINAL IF VALID.
*INVALID CHARACTERS ARE NOT RETURNED AND NOT ECHOED.

GETHEX    JSR     CHRIN           GET CHARACTER, NO ECHO
          MOVEA.L £HEXTABLE,A0    POINT TO TABLE
          BSR     SEARCH          SEARCH TABLE
          BNE     GETHEX          NOT HEX, TRY AGAIN
          JSR     CHROUT          VALID HEX, DISPLAY IT AND
          RTS                     RETURN WITH CHARACTER IN
                                  LOW BYTE OF D0.

                   * * * SEARCH * * *

*SEARCH A TABLE FOR BYTE HELD IN D0.
*ON ENTRY, LOW BYTE OF D0 HOLDS BYTE TO BE SEARCHED FOR
*AND A0 POINTS TO START OF TABLE (TABLE TERMINATED BY 00).
*ON RETURN, THE ZERO FLAG IS SET IF BYTE FOUND,
*RESET IF BYTE NOT FOUND. BYTE RETURNED IN D0, EITHER WAY.

SEARCH    CMP.B   (A0)+,D0        CHECK FOR MATCH AND BUMP
                                  POINTER
          BEQ     FOUND           RETURN WITH ZERO FLAG SET
                                  IF FOUND
          TST.B   (A0)            CHECK FOR END OF TABLE
          BNE     SEARCH          CONTINUE SEARCHING IF NOT
                                  END
          ANDI.B  £$FB,CCR        IF END, RESET ZERO FLAG
FOUND     RTS                     AND RETURN

HEXTABLE
          DC.B    '0123456789ABCDEF',00

          END
```